

REMARKS

Claims 11-15, 30-33, 37-39, and 41-50 are pending in this Application. By this Amendment, claims 11, 30, and 41 have been amended, and new claims 48-50 have been added. Support for the amendments and the new claims may be found at least in paragraphs [0043]-[0044] and Fig. 4 of the published Application. New claims 48-50 recite features previously recited in amended claims 11, 30, and 41, respectively. No new matter is added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (as the amendments amplify issues previously discussed throughout prosecution); (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Claims Define Patentable Subject Matter

The Office Action rejects claims 11-13, 15, 30-33, 37-39, 41-44, and 46-47 under 35 U.S.C. §103(a) as being unpatentable over Choo (U.S. Patent No. 6,452,362) in view of Olson (U.S. Patent No. 6,727,602) and further in view of Nishihara (U.S. Patent No. 6,522,902); and rejects claims 14 and 45 under 35 U.S.C. §103(a) as being unpatentable over Choo in view of Olson, Nishihara, and further in view of Kitagawa (U.S. Patent No. 6,624,613). To the extent

that these rejections remain applicable to the claims, as amended, the Applicants respectfully traverse these rejections, as follows.

The Applicants disclose a novel and unobvious approach for extending battery life in an electronic device having a first battery and a second battery. This is achieved by first determining whether a voltage differential exists between the first battery and the second battery. If no voltage differential exists between the first and second batteries, a determination is then made as to whether the device is operating in the traffic state or the idle state. Then, based on the operating state, it is determined whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the device.

A. Claim 30

The above concept is captured in amended claim 30, which recites, *inter alia*, “a power management module configured to determine whether the processor is operating in the traffic state or the idle state, and, based on the operating state of the processor, the power management module being further configured to determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the processor.” As discussed below, neither Choo, Olson, nor Nishihara disclose or suggest all of the features now recited in amended claim 30.

In rejecting claim 30, the Examiner acknowledges that Choo fails to disclose a power management module that is configured to operate each of the first and second batteries in the pulse current discharge mode when the device is in traffic state, and that is configured to continuously couple the first and second batteries to the processor when the device is in idle state, as recited in claim 30. The Examiner, however, at pages 7-9 of the Office Action, relies on

Olson and Nishihara for these features. Specifically, the Examiner asserts that Olson discloses a power management module that is configured to operate each of the first and second batteries in the pulse current discharge mode when the device is in traffic state, and that Nishihara discloses a power management module that is configured to continuously couple the first and second batteries to the processor when the device is in idle state. The Examiner then alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Choo, Olson, and Nishihara in order to more efficiently operate multiple batteries and to extend battery life and improve power consumption. The Applicants respectfully disagree.

The Applicants respectfully submit that, even if the combination of Choo, Olson, and Nishihara did disclose all of the separate features addressed in the Office Action (not admitted), it would not have been obvious to one of ordinary skill in the art to combine the cited references because the combination of these references would still fail to suggest a power management module configured to determine whether the processor is operating in the traffic state or the idle state, and, based on the operating state of the processor, determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the processor, as recited in amended claim 30.

Olson discloses a power supply and switching mechanism that utilizes a first battery and a second battery to charge a load. Olson discloses a power controller 108 that controls the power delivered to the batteries by opening and closing switches 103 and 106 in an alternating fashion via a series of pulses (control signals V_P and V_N). Olson also discloses that the power controller 108 may close the switches 103 and 106 so that the power is delivered from both batteries at the same time. See col. 5, lines 29-37 of Olson. However, there is no suggestion anywhere in Olson

that the power controller 108 determines based on the state (standby or active) of the load whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load, as expressly required by claim 30. Olson merely varies the amount of time that the controlled power switches discharge the battery into the load by altering the pulse width of control signals V_P and V_N . See col. 9, lines 58-67 and col. 10, lines 1-47. Accordingly, Olson, either individually or in combination with Choo, fails to disclose or suggest a power management module, as recited in amended claim 30.

Nishihara merely discloses a battery pack including a control mechanism that switches the connection of two batteries from parallel to series during a talk mode, and from series to parallel during non-talk mode. However, there is no mention whatsoever in Nishihara of a pulse current discharge mode. Thus, the battery pack of Nishihara is not configured to determine based on the state (talk or non-talk) of a device whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the device, as expressly required by claim 30. Accordingly, Nishihara, individually or in combination with Olson and Choo, fails to disclose or suggest at least a power management module that is configured to determine based on the state of a load whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load, as recited in amended claim 30.

Secondary reference Kitagawa, individually or in combination with Choo, Olson, and Nishihara, also fails to disclose or suggest the aforementioned features, as recited in claim 30, and as such, fail to make up for the deficiencies of Choo, Olson, and Nishihara.

B. Claims 11 and 41

For reasons similar to presented with regard to claim 30, the Applicants respectfully submit that Choo, Olson, Nishihara, and Kitagawa, either individually or in combination, fail to disclose or suggest all of the features recited in amended claims 11 and 41. Claim 11 recites, *inter alia*, “means for determining a current required by a load; and means for determining, based on the required current, whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load.” And claim 41 recites, *inter alia*, “a power management module configured to determine a current required by a load, and, based on the required current, the power management module being further configured to determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load.”

In particular, neither Choo, Olson, Nishihara, nor Kitagawa disclose or suggest at least a device that, based on a current required by a load, determines whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load, as recited in amended claims 11 and 41.

As previously discussed, Olson merely discloses a switching mechanism that varies the amount of time that the controlled power switches discharge the battery into the load by altering the pulse width of control signals V_P and V_N ; and Nishihara merely discloses a battery pack including a control mechanism that switches the connection of two batteries from parallel to series during a talk mode, and from series to parallel during non-talk mode. There is no suggestion in either of the references that, the switching mechanism of Olson or the control mechanism of Nishihara determines whether to operate each of the first and second batteries in a

pulse current discharge mode or to continuously couple the first and second batteries to the load based on a current required by a load, as recited in amended claims 11 and 41.

Choo fails to disclose the features recited in claims 11 and 41, as acknowledged by the Examiner; and Kitagawa is not relied on in the rejection of claims 11 and 41, and also fails to disclose the features recited in claims 11 and 41.

II. Conclusion

In accordance with the above remarks, the Applicants respectfully submit that claims 11, 30, and 41 define patentable subject matter. Claims 12-15, 31-33, 37-39, and 42-50 depend from claims 11, 30, and 41, respectively, and therefore, also define patentable subject matter, as well as for the additional features recited therein.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 11-15, 30-33, 37-39, and 41-50 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number set forth below.

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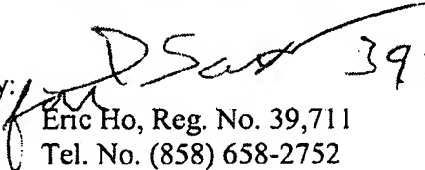
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Respectfully Submitted,

Dated:

7/8/09

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